

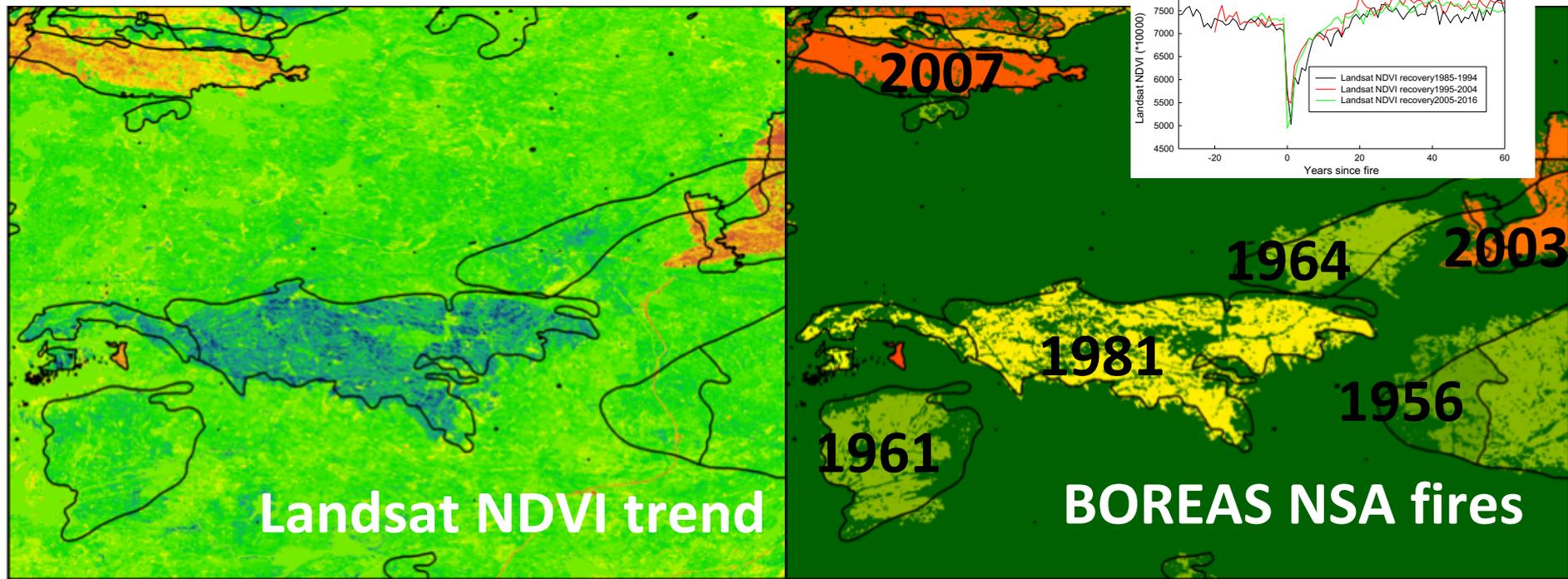
Veg. Dynamics WG- Breakout Report

- **Boreal forest greening/browning**
- **Tundra greening/browning**
- **Mapping disturbance and recovery**
- Mapping vegetation type and change

Will focus on three core subgroup synthesis papers

Boreal greening/browning punchlines

1. Boreal forest greening/browning originally identified in GIMMS NDVI record – how similar are Landsat, etc patterns? (ok, not great)
2. Fire and recovery during the satellite record create large positive or negative NDVI trends – how much of the broad browning/greening signal is caused by fire/fire recovery? (much is fire)



Boreal greening/browning

- Primarily a Landsat-based study
- BUT use ABoVE airborne data (e.g. AVIRIS water content) to confirm/test coarse-scale understanding and provide much more detailed information
 - Also LiDAR for patterns in structure, SAR for moisture, etc
- Can we separate fire and harvest (not necessarily G/B signal) from insects or other climate-related signals?
- Caveats – e.g. did we collect ABoVE imagery in areas that can be used to confirm coarse-scale patterns (e.g. hotspots)? Pre-campaign planning tried to identify these locations but was challenging
 - Depending on analysis approach different areas would show up as “hotspots”

Tundra greening/browning

- Similar approaches and issues with Boreal synthesis
- However, tundra is highly heterogeneous
- Key issues:
 - Lots of greening areas, lots of browning areas, some that have flipped
 - Climate is important, but can be more indirect than direct
 - Ground features
 - Permafrost, herbivory
 - Changes in moisture, lake area
 - Thermokarst, etc
- Need to identify what happens on a year to year basis? What makes the tundra increase/decrease from year to year?
- What new datasets can we leverage?

Disturbance and recovery

- What do we mean by disturbance?
 - Canopy, understory, greenness?
- Current maps aren't very good, but some highlights (e.g. Canada National Burn Area Composite)
 - Fire OK, insects and harvest much more challenging
- Multi-scale synthesis (ground, ABoVE, Landsat, other EO)
- Need to work closely with ground teams
- Do we have data to help inform whether we are seeing an increase in recovery rate? What about separating community recovery?
- Caveats: need to consider disturbance interactions, possible changing recovery trajectories with climate change; can we use Landsat phenology to separate deciduous vs conifer?

Overall Goals

- Less new science – mostly pulling together existing work from individual teams and outside collaborators
- Use papers to guide discussion on next set of refined research questions
- Leverage unique ABoVE airborne campaign data to provide new insights and drill down to understand patterns within coarser-scale observations. Multi-scale, multi-sensor approaches
- Also use syntheses to identify knowledge/science gaps, data gaps, and identify other sources of data that may be important but not presently being utilized
- Create opportunities for others to get involved from other WGs and collaborators to help move syntheses forward